

Unit 1: Alchemy
Lessons 17-24 Test Review

Name: KEY
Date:

Pd:

In order to study for the test, you should:

- ✓ Review all classroom outlines for Lessons 17-24
- ✓ Review all vocabulary terms which are located at the end of each lesson in a list
- ✓ Look over all activity worksheets done for Lessons 17-24
- ✓ Read the lesson summaries found at the end of each lesson
- ✓ Review quizzes and homework assignments for Lessons 17-24

The test will include both objective and free response portions. If you are absent on the day of the exam, please be ready to take it immediately upon your return.

The following are some sample review questions for each lesson. This worksheet is a selected review for Lessons 17-24 and does NOT cover all material for the test. Also, be aware that you should review the concepts learned in these lessons but will also be required to *apply* this knowledge on the test.

LESSON 17: Flame Tests

1. What is the purpose of a flame test?

Detect presence of certain metal atoms.

2. LiCl produces a red flame. Which part of the compound causes the color – the Li or the Cl?

Li: the metal

3. Describe how the electrons in a metal atom produce different colors of lights.

Electrons get excited when heated and jump out to a higher energy electron shell. When it moves back, it emits light.



4. Use the table on page 88 to predict the flame colors for:

a) $\text{Ca}(\text{OH})_2$

b) KBr

c) Na_3PO_4

Orange

pink-lilac

yellow-orange

LESSON 18: Valence and Core Electrons

5. On the periodic table, the group numbers of main-group elements indicate the number of:

Valence e^-

Groups 1-2; 13-18

6. On the periodic table, the period numbers indicate the number of:

Main electron shells

LESSON 20: Ionic Compounds

15. a) Do metals form cations or anions? Provide 2 examples.

Cations: K^+ Al^{3+}

b) Do nonmetals form cations or anions? Provide 2 examples.

Anions: O^{2-} F^-

16. What is the rule of zero charge?

Cations and anions must combine so that charges cancel out in an ionic compound.

17. Write the formulas for the compound created from each pair of elements/ions.

a) Na^+ and O^{2-} Na_2O

c) calcium and sulfur CaS

b) Sr^{2+} and N^{3-} Sr_3N_2

d) Be and Cl $BeCl_2$

18. How many total valence electrons are in the following compounds?

a) $CaCl_2$

16

b) KF

8

c) BeO

8

d) K_2O

8

LESSON 21: Formulas for Ionic Compounds

19. Write the chemical formula **AND** name for the compound created from each pair of elements:

a) potassium and chlorine

KCl : potassium chloride

c) oxygen and magnesium

MgO : magnesium oxide

b) sodium and sulfur

Na_2S : sodium sulfide

d) aluminum and fluorine

AlF_3 : aluminum fluoride

20. For each compound below, write the cation and anion with the appropriate charge. Then write the chemical formula.

a) potassium oxide

(K_2O) K^+ O^{2-}

b) magnesium nitride

Mg^{2+} N^{3-}

(Mg_3N_2)

c) beryllium fluoride

Be^{2+} F^- (BeF_2)

d) sodium bromide

Na^+ Br^-

$(NaBr)$

LESSON 23: Transition Metal Chemistry

***Transition metals form cations. These charges cannot be determined from the periodic table so they are indicated by Roman numerals in the chemical name.

Example: copper (II) chloride, $\text{CuCl}_2 \rightarrow$ Copper has a charge of +2

iron (III) oxide, $\text{Fe}_2\text{O}_3 \rightarrow$ Iron has a charge of +3

LESSON 24: Electron Configurations

26. What is the difference between an electron shell and an electron subshell?

Electron subshells (s, p, d, f) make up the main electron shells

27. How many subshells are possible for an atom?

s, p, d, f

28. a) What are the names of the four subshells?

s, p, d, f

b) How many electrons can each subshell hold?

s: $2e^-$

d: $10e^-$

p: $6e^-$

f: $14e^-$